DOCKET NO.: CC-3397, A4772US4
Application No.: 10/024,862
Office Action Dated: May 4, 2004

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Brifcani, et al.

Confirmation No.: **1866**

Application No.: **10/024,862**

Group Art Unit: **3725**

Filing Date: **December 18, 2001**

Examiner: **Larson**

For: **Can End and Method for Fixing Same to a Can Body**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REPLY PURSUANT TO 37 CFR § 1.111

In response to the Official Action dated **May 5, 2004**, reconsideration is respectfully requested in view of the following remarks.

As a preliminary matter, the undersigned wishes to thank Examiner Larson for the courtesies extended during the personal interview on June 3, 2004.

In the May 5, 2004, Office Action, all of the pending claims were rejected as being obvious over the prior art – *i.e.*, the combination of applicants' admitted prior art and either U.S. Patent 4,448,322 ("Kraska") or Japanese Kokai JP 57-117323 ("JP reference"). As discussed in the interview, neither Kraska nor the JP reference render the claimed seaming method obvious when combined with applicants' admitted prior art.

Applicants admitted prior art, set out in the instant application at page 5, line 3, to page 6, line 19, describes conventional seaming of a can end onto the flange of a can body.[1]

1 As discussed at the interview, conventional seaming is also described in the document "Modern Beverage Can Double Seaming" by Continental Beverage Packaging, already made of record in the IDS filed on October 11, 2002 (reference CJ in the PTO 1449 form) As also discussed at the interview, although U.S. Patent 5,911,551 ("Moran") is not prior art with respect to the current invention as established by the declaration accompanying Applicants' response to the August 7, 2003 Office Action, insofar as it relates to the current invention, the seaming method disclosed in Moran amounts to no more than the conventional method (the invention of Moran

Prior to seaming, the entire wall of a conventional end is oriented vertically or at a relatively shallow angle to axis of the end, typically approximately 12° to 15°. As shown in Figure 2, a seaming chuck is inserted into the end so that the lower portion of the chuck engages the interior surface of the reinforcing bead to create a driving force for imparting relative rotational motion between the end and the seaming rolls during the seaming process. The seaming rolls press the end's peripheral cover hook against the wall of the chuck so as to form the double seam. After retraction of the seaming roll, the wall springs back slightly. While the wall is deformed as a result of the seaming operation, the *entire* wall from the top of the seam down to the start of the reinforcing bead is essentially straight, or may have a slightly concave profile, and remains oriented at a relatively shallow angle. Consequently, the seamed end may be weaker than the unseamed end.

As discussed at the interview, Applicants have discovered that both the thickness of the can end necessary to achieve adequate buckle resistance and the overall diameter of the flat metal sheet from which the end is formed (*i.e.*, the "cut diameter") could be significantly reduced by providing a can end having a particular geometry, including a wall as recited in the pending claims, and deforming it *in a seaming operation* so as to produce a seamed end having a different geometry.

As shown in Figure 4 and described in the corresponding text of the instant application, according to the preferred embodiment, the seaming operation begins by providing a can end comprising a wall extending from the seaming panel portion of the cover hook 23 (the radius of the seaming panel is designated r_2 in Figure 4) to an annular reinforcing bead 25. The wall of the can end is then engaged by a chuck 31 having a substantially cylindrical wall 33 and an inclined wall 32, as shown in Figure 5. Preferably, the rotation of the can end is driven through driving contact between the juncture formed by the chuck walls 32 and 33 and the can end wall.

As shown in Figures 6 and 7, according to the preferred embodiment, during the seaming operation, seaming rolls 34 and 38 deform an upper portion of the can end wall by pressing it against a substantially cylindrical (preferably within ±4° of vertical) upper wall of the chuck so as to form, along with the peripheral curl, a double seam. Although the upper

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is directed to certain details concerning the relationship between the radii of the seaming panel and can body flange so as to increase the length of the seam).

wall portion will typically spring back a few degrees when the seaming roll is retracted, it remains oriented substantially cylindrically. However, the lower portion of the wall (and, of most importance for present purposes, a straight line extending between its two ends) remains inclined at an angle between about 20° and about 60° with respect to the axial centerline. The deformation of the upper portion of the wall so as to form a seam is accomplished by causing the juncture formed by the walls 32 and 33 of the chuck to engage the can end wall so that the upper portion of the can end wall is bent upwardly around the juncture by the seaming rolls. The resulting seamed end, shown in Figures 7 and 9, has greater buckle resistance than the unseamed end since the gas pressure forces imparted to the lower portion of the chuck wall are directed to the base of the relatively strong seam, which resists buckling deformation. Since commercialization in about early 2001, Crown Cork & Seal Company sold approximately 35 billion ends worldwide that were seamed onto can bodies using the claimed seaming method by carbonated beverage companies such as Coca Cola, Pepsi Cola, RC Cola, Labatt's, and Rolling Rock.

Accordingly, claim 68, for example, specifies a seaming method that comprises the step of "deforming said first wall portion such that at least a portion of said first wall portion after seaming is substantially cylindrical, . . . said line between said first and second locations on said wall remaining inclined between about 20° and about 60° with respect to said axial centerline after completion of said seaming operation."

Claim 77, which unlike claim 68 does not require that the can end have a reinforcing bead, recites that the "first portion of said can end wall is bent upward through an angle of at least about 16°" and "said line between said first and second locations remaining inclined between about 20° and about 60° with respect to said axial centerline."

Claim 88 specifies that the seaming operation "bend[s] a portion of said can end wall upwardly around said juncture of said chuck walls at a first location on said can end wall, a straight line extending from said first location on said can end wall to said transition between said can end wall and said reinforcing bead inclined between about 20° and about 60° with respect to said axial centerline both before and after said seaming operation."

Claim 11 is directed to another aspect of the invention and specifies that "rotation of said can end during said first seaming operation driven by said rotating chuck through driving contact between said juncture of said first and second walls of said chuck and said inclined

wall of said can end without driving contact between said chuck and said can end bead interior surface."

The claimed method for seaming a can end onto a can body is neither taught not suggested by the prior art. Although Kraska discloses an end that, prior to seaming, has a wall oriented at an angle greater than that conventionally used (*i.e.*, 25 °), it does not disclose seaming according to the claimed method. Rather, unlike the claimed method, Kraska stresses the importance of seaming using conventional seaming tooling:

> [T]he particular dimensions, specifically the location of the countersink with respect to the remainder of the end is such that *conventional seaming tooling* can be utilized for double tooling the present end onto a container body. . .. Thus, the fully converted end can readily be double seamed to a container body utilizing commercial equipment that packagers are presently using.

(Kraska at col. 7, line 64, to col. 8, line 17).

Further, seaming Kraska's end using a conventional seaming chuck would not amount to practicing the claimed method nor result in the end produced by the claimed method.

The JP reference shows only an end *after* seaming onto a can body and provides no details concerning the configuration of the can end prior to seaming or, more importantly, the method used to yield the seamed can end shown in the figures of the JP reference.

Additionally, with respect to claim 11, neither Kraska nor the JP reference teaches or suggests that "said rotation of said can end during said first seaming operation [is] driven by said rotating chuck through driving contact between said juncture of said first and second walls of said chuck and said inclined wall of said can end without driving contact between said chuck and said can end bead interior surface."

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For the foregoing reasons, Applicants respectfully submit that the rejection should be withdrawn and that each of the claims is in allowable condition.

Applicants request that, in the next communication, the Examiner forward an initialed copy of the PTO-1449 form submitted in the Information Disclosure Statement filed on May 4, 2004.

Date: June 9, 2004

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